REPORT OF A MEETING OF THE
TAXONOMIC SUBCOMMITTEE ON LEPTOSPIRA
MONTREAL, 16-17 AUGUST 1962

There were present:

Prof. Dr. J.W. Wolff, Chairman
Dr. L.H. Turner, Secretary
Dr. A.D. Alexander
Prof. Dr. B. Babudieri
Dr. C. Borg-Petersen
Dr. Mildred M. Galton

Dr. Meridian R. Ball)
Dr. J. Czekalowski) Associate Members
Dr. M.M. Kaplan (Observer from W.H.O.)
Dr. A.W. Stableforth (Visitor)

The Chairman, after opening the meeting, paid tribute to the two deceased members of the Subcommittee, Dr. J.C. Broom (Secretary) and Professor D. Combiescu. The contribution which Dr. Broom had made to the establishment of a friendly and cooperative spirit in the Subcommittee and associated working groups was stressed. Those present then observed a short silence in memory of their colleagues.

The Chairman welcomed the visitors.

Professor Curbelo and Dr. Kirschner have resigned on their retirement from active work.

The items on the Agenda were then considered.

1. (a) The nomination of Dr. L.H. Turner for Secretary was proposed by the Chairman, seconded by Dr. Alexander, and agreed unanimously.

(b) The roll of Members and Associate Members of the Subcommittee was considered. Although one Member and two Associate Members had failed to acknowledge any of the recent questionnaires or correspondence connected with this meeting they were re-elected, pending further enquiries; the remainder were re-elected without reservation.

2. (a) It was agreed unanimously that the re-definition of the genus Leptospira be considered on a wider basis than that of the morphological appearances revealed by electronmicroscopy and the following definition was therefore proposed.

Genus Leptospira Noguchi, 1917

Finely coiled spiral organisms which may be a few μ to 40 μ or over in length, but usually 6 to 20 μ ; and 0.1 μ in diameter. The spirals measure about 0.3 μ in depth and 0.4 to 0.5 μ in amplitude. In liquid media both ends usually hooked. The organisms are observed most clearly with dark-field and much less clearly with phase-contrast microscopy; not visible with ordinary illumination; not readily stained by aniline dyes but can be demonstrated by silver-impregnation techniques. An axostyle can be demonstrated by electronmicroscopy; no free flagellum or undulating membrane; no volutin granules. In liquid media the characteristic movements are (1) rapid rotation on the longitudinal axis and (2) translation without polar differentiation; in semi-solid media (3) flexion, vermiform and boring movements occur. Can usually be grown in artificial media; oxygen is required. Many strains known to exhibit oxidase, catalase, transaminase, and lipolytic and haemolytic activity.

(b) The Subcommittee recommended that the genus Leptospira be divided into two species: L. interrogans, representing parasitic strains; and L. biflexa, saprophytic strains.

The Subcommittee agreed on the following definitions of the two species of Leptospira.

Leptospira interrogans. Parasitic in man and other vertebrates, particularly mammals; occasionally reported in arthropods. Requires serum or other growth factors at present not clearly defined. Susceptible to the bacteriostatic action of divalent copper ions in a solution of copper sulfate diluted 1 in 100,000. Divided into numerous serological types. The proposed neotype strain is RGA.

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Leptospira biflexa Wolbach and Binger. Saprophytic. Can be grown in serum-free media. Resistant to the bacteriostatic action of divalent copper ions in a solution of copper sulfate diluted 1 in 100,000. Divided into numerous serological types.

The first strain to be isolated (Wolbach, S.B. and Binger, C.A.L. 1914, J. med. Res. 30:23) has been lost. A neo-type strain will be proposed by the Subcommittee after investigation of the oldest available documented strains.

(c) It was agreed that serotype is the basic infrasubspecific taxon within the genus Leptospira. Each serotype and subserotype is represented by a designated type strain. It was unanimously agreed that the following definitions of serotype and subserotype, within the genus Leptospira, be proposed.

"Group." The Subcommittee agreed that the concept of grouping is applicable to serotypes on a basis of major antigenic relationships as disclosed by cross-agglutination. However, in the absence of factorial analysis, such relationships cannot readily be delineated and are not precise. The Subcommittee agreed that it was unable to propose taxonomic status for such groups of serotypes but that they should be arbitrarily retained for practical purposes in preliminary diagnostic procedures. After considerable discussion the Subcommittee decided to suggest that the prefix "sero" should be abandoned and that the groups should continue to be indicated by name rather than by numerals.

Serotype. Two strains are considered to belong to different serotypes if, after cross-absorption with heterologous antigen, 10% or more of the homologous titre regularly remains in each of the two antisera in repeated tests.

Subserotype. A subserotype is a strain within a serotype where, in repeated tests, less than 10% of the homologous titre regularly remains in one antiserum but 10% or more in the other antiserum after cross-absorption with heterologous antigen (within the serotype).

These definitions are based on the use of antisera prepared in rabbits.

(d) It was agreed that there is insufficient knowledge of other properties of leptospire for these to be used as bases for taxonomic purposes.

3. (a) It was recommended that the use of binomial and trinomial nomenclature hitherto commonly, but incorrectly, applied to serotypes and subserotypes (infrasubspecific taxa) be discontinued. For example, the correct scientific name would be Leptospira icterohaemorrhagiae* serotype autumnalis subserotype rachmat, not Leptospira autumnalis rachmat, nor Leptospira rachmat.

(b) It was recommended that Latinized names be used in designating new serotypes and subserotypes; but names already given should be maintained unchanged except for typographical or orthographical corrections.

(c) It was recommended that two serotypes, andamans A and semaranga, be re-classified as members of the species L. biflexa on the basis of their serological, cultural and biological properties (Füzi, M. and Csoka, R. 1960. Zbl. f. Bakt. Orig. I, 179:231; Babudieri, B. in press). Strain CH 11 (andamans A) was isolated from a man with clinical leptospirosis and it was pathogenic for young guinea pigs (Taylor, J. and Goyle, A. N. 1931. Indian med. Res. Mem., No. 20); but there are good reasons for doubting the authenticity of the present cultures. Strain Veldrat Sl73 (semaranga) was isolated on a single occasion, from the kidney of Rattus brevicaudatus; the primary culture was contaminated (Sardjito, M. and Mochtar, A. 1939, Geneesk. Tijdschr. Ned.-Ind. 79:2520) but this strain has always behaved as L. biflexa.

(d) A revised list of parasitic leptospire will be submitted for publication together with one of saprophytic leptospire. The latter, which is admittedly incomplete, is the first to be offered—a result of recent interest in the species L. biflexa.

* Or L. interrogans whichever may be upheld by an Opinion of the Judicial Commission which will be requested.

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5. A list of distribution of serotypes, by country and host, is being prepared by Dr. Alexander, Prof. Babudieri, Dr. Galton, Dr. Kmety and Prof. van der Hoeden. The Subcommittee greatly appreciates this action and recommends the publication of the lists in the Bulletin of the World Health Organization.
6. (i) The Subcommittee has reviewed the Report to the Director-General W.H.O., submitted on 26 March, 1962 by the Scientific Group on Research in Leptospirosis which met at Geneva, 20-24 February, 1962, and recommends that it be published.

(ii) The Subcommittee has noted problems intimated by members who were unable to be present and regrets that opportunity to discuss these items did not occur at this meeting.

The Meeting was closed by the Chairman at noon, 17 August, 1962.

J.W. Wolff
Chairman

L.H. Turner
Secretary